ESM No. 471

Collective Market Action: Its Potential Impact on Farm Structure

by

Dennis R. Henderson

Department of Agricultural Economics & Rural Sociology
The Ohio State University
In Association with the Ohio Cooperative Extension Service

July, 1972

COLLECTIVE MARKET ACTION: ITS POTENTIAL IMPACT ON FARM STRUCTURE*

Dennis R. Henderson

"We seem to stand transfixed before the advance of technologically-induced change, like a rabbit before the snake."

Phillip M. Raup [22]

There is increasing awareness of the gradual trend toward greater concentration of agricultural production on large farms. Much concern is now being expressed about the impact of this trend. This encompasses issues such as the future of traditional agriculture and the family farm, the role of corporations in farm production, the demise of rural communities, the changing political power structure, and the loss of individual

---

*Contributed paper in the Agribusiness Research Sectional Meeting, American Agricultural Economics Association Annual Meeting, Gainesville, Florida, August 20-23, 1972. Appreciation is expressed for review and suggestions made by Bruce Marion, Bernard Erven, Richard Duvick and M. E. Cravens.

Dennis R. Henderson is assistant professor, Department of Agricultural Economics & Rural Sociology, The Ohio State University.

freedoms. In view of these types of concerns it is important to raise the question "will the economic forces currently at play inevitably lead to only large-scale farm production in the United States, or can the farm structure resulting from these forces be altered by the judicial innovation and use of man's institutions?"

Simply put, my thesis is this: Many of the economic advantages ascribed to the large-scale farming enterprise are market oriented. As such, they may be available to the family-type farm enterprise through collective market action. That the large-scale unit has a clear-cut economic advantage is moot. [1]

---

[1]The terms large-scale and family-type farms have many meanings. As used herein, family-type farms are firms engaged primarily in agricultural production in which the capital, management and risk-bearing is supplied largely by the operating principals. These may range in size up to 3 or 4 man-year equivalents. Large-scale farms are those in which the decision-making and risk-bearing functions, capital, and other production factors are largely provided by different principals, where farming is not necessarily the primary enterprise of the firm, and where the procurement, production and marketing processes have been merged, at least partially. These are large (8 to 10 man-year equivalents) compared to conventional standards.

This is not a new idea. Certainly some of the logic for the co-operative movement was based on similar thinking. More recently Raup has noted that there is evidence that small farmers can compete with large firms when they are willing to surrender some of their sovereignty in management and marketing decisions to others [22]. This is a necessary part of any collective action. Manuel also has supported this idea, pointing out that grain cooperatives have emerged as a means of providing increased market coordination between farmers and others in the wheat industry [18], improving the competitive position of family-type farms. And Godwin and Jones [9] have noted that collective action is a means of meshing production on family-type farms with the balance of the agricultural sector, provided the legislative framework is conducive. My argument does, however, rest heavily upon the premise that most advantages to large size in farming are market-oriented rather than production-oriented, thus, generating a case for collective market action.

Collective Market Action Defined

By collective market action I mean more than farm supply and marketing cooperatives by including a wide range of institutions through which farmers can act in concert in the marketplace. This encompasses organizations such as buying groups, collective bargaining associations,

mutual aid associations, and other service, supply and marketing groups. Important aspects of such groups include: (1) farmers give up some specified individual decision-making sovereignty to the group, (2) the group unit acts as an individual entity unilaterally on behalf of its farmer-members, (4) the group unit has the power to impose certain standards of conduct upon its farmer-members with regard to the purchasing, production and/or marketing activities, and (5) the group is large enough to deal effectively on behalf of its members.

Thus, with such an institution farmers in concert would make some decisions that, prior to collective efforts, were made by individual producers. These decisions can encompass such things as the types and qualities of inputs purchased, the type and timing of input delivery, the quantities and qualities of products marketed, and the timing of product shipments: potentially, any market-related decision could be included if it enhanced the capability of the group unit to gain exchange-related advantages for its farmer-members.

At this point, two questions are apparent: (1) why should we be interested in altering or directing the future structure of farming, and (2) how can collective market action be used to accomplish this? To answer the first question requires a cognizance of the expected consequences of the current trend. The second demands an analysis of the

causal factors behind this trend and how the effects of these can be changed.

That farm production is becoming more concentrated cannot be denied. Between 1959 and 1964, for example, the share of the total sales of farm products by farms with sales of $100,000 or more increased from 16 percent to 24 percent, while these accounted for slightly less than one percent of all farms [20]. Clearly, large-scale farms are becoming an important element in U. S. agriculture. This has predicated much concern.

Societal Concerns with Structural Change in Farming

What are these concerns? Many are centered on the potential loss of the socially-desirable attributes of the family farm. The literature abounds with these. The wholesome life of a family farm is a popular issue. Kleckner has reminded us that the family-type farms produce more than crops and livestock. They have produced a disproportionate share of leaders in business, education, and government [12]. The health of rural communities is another popular issue. Some observers believe that these suffer both economically and socially as fewer but larger farms become dominant in a given area. Local businesses may be circumvented, decreasing commerce. If large-scale farms bring with

them a more mobile labor force or owners and managers that live in other communities, there may be less interest in and socio-political suasion for positive community action and beneficial institutions such as hospitals, schools, roads and other public services.

Pollution is also a frequent concern. Concentration of livestock and poultry in small areas on large-scale farms may increase the potential for air and water pollution relative to family-type farms. There may be less care in the use of agro-chemicals on large farms as ownership and management are further removed from labor.[2] Careless control of these chemicals may bring harmful contamination to soil, air, water, and the food we eat. We need only to remember Silent Spring [5] to renew awareness of this concern. Candler sounds this warning when he comments that "a large (agricultural) producer...may now find himself characterized as a 'serious source of pollution' "[4] . Others have raised the issue of monopoly power due to increased concentration in farming. This most certainly has been a concern where concentration has occurred in non-farm sectors of the economy.

---

[2]On the other hand, some have argued that the more specialized and better-trained labor used on large farms may lead to more care in the use of potentially harmful chemicals.

Clearly, there are losses to society associated with the demise of the family-type farm structure. Yet, it has been argued by many and demonstrated by a few that there are real economic advantages to large size in farming and that these are important forces underlying the structural change in farm production.

Factors Leading to Increased Concentration

Many of the forces underlying increased farm concentration arise from economic advantages associated with large size. Most size-related advantages stem from a process Shaffer has labeled scientific industrialization [24]. Elements of this process include the substitution of capital and technical knowledge for labor, the specialization of work roles, the integration of specialized efforts into coordinated activities, and the production and distribution of technical and scientific knowledge. The impacts of this process on the size and structure of economic institutions have been articulated by many, including Galbraith [8], Mueller [19] and, relating directly to agricultural production, Godwin and Jones [9] to mention only a few.

The most frequently mentioned impact is technical economies to size in production resulting from labor specialization and the substitution of lumpy capital inputs for labor. While there is no clear evidence that

economies to size in farm production dictate extremely large farms, a review of several studies by Madden indicates that a minimum of 500 to 600 acres is necessary to achieve production efficiency for most crops [17] . This is larger than many farms associated with traditional agriculture but well within the range of many family farm operations.

Other aspects of scientific industrialization, however, may be equally or more important, particularly those associated with exchange-related activities, or sources of pecuniary economies external to the firm. Increased on-farm specialization has generated a need for improved coordination of exchange with non-farm subsectors. New and different product forms and techniques by which products are delivered to consumers require careful planning and control of product quantities and qualities flowing off farms and into processing and distribution. Larger farms appear to be an integral part of this coordination system, witness the broiler industry as only one example. Seasonal use of some inputs that are produced year around, such as fertilizers, and the year around use of other inputs that are produced seasonally, such as feed grains, requires coordination with suppliers that may best be facilitated by large production units. Faris and Armstrong found, for example, that large farms gain significant pecuniary economies in the acquisition of inputs[7] ,

undoubtably due at least in part to cost savings associated with improved coordination.

In addition to the technical and pecuniary economies, there are other factors influencing farm size that deserve brief mention. The family farm appears to have an advantage due to motivational efficiency of human factors, labor and management, a phenomenon Leibenstein calls X-efficiency [16]. This is reflected in a willingness to work long hours, an emotional commitment to farming, and closer interest in the success of the business. The family farm may also have lower entry barriers as it doesn't have to assemble a large acreage in physical proximity, and it may have a more favorable image in the community and less problems with pollution.

The large farms have advantages associated with organizational efficiency, or O-efficiency, to make a micro application of Helmberger's concept [11] . Specialized labor and management, better utilization of managerial aids such as computers, consultants, and financial and legal advisors, and organizational responsiveness are important components. Access to borrowed capital and certain tax advantages, particularly the opportunity to convert income to capital gains in farming, are additional factors favoring large farms.

Technical and pecuniary economies, however, appear to be the most significant economic factors affecting farm size. Many studies indicate that most technical economies can be achieved on family-type farms. Pecuniary economies, on the other hand, originate in the market-place and appear to accrue only to firms much larger than the family farm. In a thought-provoking analysis of these market-oriented forces, Armstrong sounds this warning when he notes "even the large family farm misses many of the subtleties in the economies of size which may be more important than our current measures of efficiency reflect" [2]. He concludes, as have many others, that the family farm is among the organizations threatened by these external advantages.

It is not difficult to view the economic forces arising from scientific industrialization as a type of "technological determinism" pulling, unfettered, the farm structure to one dominated by large farms and increased concentration. However, it is these economic advantages, to the extent that they are market-oriented pecuniary economies, that can, I believe, accrue to the family-type farm through collective action in the marketplace, thus, improving their competitive position vis-a-vis the large farm.

Empirical Evidence on Size Economies

Most studies of size economies in farming have dealt with technical efficiencies in production without much concern for market-originated pecuniary efficiencies. Only recently have agricultural economists addressed head-on the structural impact of both the market-oriented and production-oriented economies in farming. In a pioneering study in this area, Krause and Kyle investigated these on midwest corn farms [14, 15] . They found substantial economies to size on large farms (5000 acres) compared to smaller, 500 acre units, most of which appear to be due to market-related pecuniary advantages. Their findings will be evaluated in the light of other economies to size studies. From such a comparative analysis the case for collective market action takes on a definitive form.

A number of studies have shown that most or all technical economies in production are reached on farms that are within the size and scope of family-type farms, although this does not mean that all family farms are necessarily large enough to realize all of these technical efficiencies. Dietrich, for example, found no significant differences in technical efficiency on cattle feedlots ranging in size from 1000 head to 10,000 head [6] . Harl cites studies that have shown that most technical efficiencies on Iowa corn farms are achieved with about 600 acres.

An Arizona study indicates that minimum milk production costs are reached with herd sizes ranging from 250 to 350 head [10] . Paarlberg points to Purdue studies indicating that most technical efficiencies are realized on typical Indiana grain and livestock farms with two men on 500 to 600 acres [21] . And in their detailed study of midwest corn farms, Krause and Kyle found little evidence of greater technical economies on large farms than on 500 acre units, with the notable exception of machinery-associated costs [14] . It appears doubtful, therefore, that large size is needed to achieve technical economies in farm production.

Most of the studies of economies to size in farming have assumed that all farm firms buy and sell at average market prices. Krause and Kyle, on the other hand, included economies from buying and selling in their analysis. They found such economies, when coupled with other size-related factors, yield a total net advantage (before taxes) of $15.94 per acre to the large-scale, 5000 acre midwest corn farm compared to the family-type 500 acre unit. The components of this advantage are detailed in Table 1.

As indicated in the table, Krause and Kyle found a net cost advantage to the large-scale unit of $10.22 per acre, which includes $9.48 savings on purchased inputs, $4.56 savings on machinery

Table 1. Total Net Advantage, Before Taxes, to Large-Scale 5000 Acre Corn Farms Compared to Family-Type 500 Acre Units (Per Acre)[a]

Item	Dollars Per Acre Advantage 5000 A. Unit Compared With 500 A. Unit[b]
Decreasing Cost Factors	Savings
Purchased Inputs	9.48
Seed	1.84
Fertilizer	3.52
Crop Chemicals	1.79
Petroleum Products	.98
Machinery Repairs	.37
Borrowed Capital	.98
Other--Machinery Depreciation[c]	4.56
Total	14.04
Increasing Cost Factors	Increased Costs
Labor	1.82
Supervision & Consultants	2.00
Total	3.82
Net Cost Advantage to Large Units	10.22
Net Revenue Advantage to Large Units[d]	5.72
Total Net Advantage Before Taxes	15.94

SOURCE: Based upon data from [14, p. 755]

[a]Assumes equal quality and price of land, and equal yields and quality of product.

[b]Researchers included data for intermediate sizes. Only the smallest and largest units studied are compared here.

[c]Reflects both lower purchase price of machinery (buying advantage) and the use of less machinery per acre (technical advantage).

[d]Researchers indicate about 300,000 bushels of corn are necessary to gain this selling advantage, but note that some smaller units achieve selling advantage by combining output with that of other farms.

depreciation, and $3.82 of increased costs associated with higher labor, supervision and consultant expenses. Note that most of the cost advantage, $9.48, comes from lower costs for purchased inputs. Their findings show clearly that this cost advantage is due to lower prices paid for these purchased inputs by the large-scale farms [15, pp. 13-16]. These lower prices apparently stem from discounts arranged through direct negotiation with manufacturers, jobbers and distributors of major inputs.

The balance of the cost advantage discovered by Krause and Kyle stems from machinery depreciation, due to two factors: (1) large-scale units use less machinery per acre, a technical advantage, and (2) large units pay less for their machinery, a market-related pecuniary advantage. How much of the $4.56 advantage is due to each factor is not clear from their report because of different machinery complements used on the different size farms, but they do mention that large-scale farms received discounts on machinery prices up to 10 percent below dealer invoice price [15, p. 16]. Thus, at least some of the cost advantage on machinery is market-related. In total, therefore, most of the demonstrated cost advantages to farms larger than family-type are market-related pecuniary economies rather than technical production economies.

Partially offsetting the demonstrated cost advantages to large-scale farms are increased costs for labor and supervision. These higher costs reflect higher wage rates and salaries paid by large units, greater supervision requirements, different fringe benefit payments and the use of more hired and less family labor on large farms. In effect, these factors add up to a $3.82 advantage to the family-type farm due to internal operating efficiencies plus differences in wage-salary costs stemming from generally lower reservation prices for labor on family farms relative to large farms.

In addition to the cost advantages found on large-scale farms, Krause and Kyle also documented a revenue or selling advantage of $5.72 per acre (Table 1). This reflects a higher selling price obtainable by large units [15, p. 16], or another market-related pecuniary economy to size. Sources of such gains are many, but depend largely upon the elimination of some traditional product marketing steps as the production unit becomes increasingly involved in the marketing process. They found contracts to be a major instrument used to this end by large producers. These specify delivery times, quantities, and qualities, all of which have value in terms of added utility in the coordination of product flow.

Krause and Kyle found that managers with a large quantity of corn to market could apparently stay in constant contact with potential market outlets [15, p. 17], generating a higher average annual price. They also found that firms with a large volume to market moved the product rapidly to any location in the trading area with the most favorable net-back (highest price, adjusted for transportation and handling). The large units typically bypass local markets, marketing directly to terminals or large-volume users. Managers of the large farms were found to be more likely to use the futures market to hedge or to sell for future delivery (contract) than were family-type farm managers, which may be an additional component of the marketing advantage of the large units.

On the revenue side, as was the case for costs, most of the economies realized by the large unit are pecuniary and external to the firm. That is, they originate in the market rather than internally as do technical production economies. Thus, most of the economic forces that favor large-scale production agriculture are market-related and not tied directly to production technology. Most, if not all, of the technical economies can be achieved on family-sized farms. If means can be employed to gain these same market-related advantages for smaller farms, then the potential for survival of the family-type farm structure is enhanced. Collective market action appears to offer such potential.

The Potential for Collective Market Action

It seems likely that most of the market-related advantages enjoyed by large farms can also accrue to family-type farms through successful collective action in the marketplace, thus, putting the family farmer who has achieved most available technical efficiencies in a position where he can compete favorably with the large farm.

It has been shown that much of the cost advantage of large farms is due to lower prices paid for production inputs. Price discounts received by these farmers apparently result from direct negotiations with suppliers. Elements of direct negotiation strategies include obtaining competitive bids from suppliers and taking delivery of relatively large quantities directly from manufacturing or distribution points. Thus, many of the traditional supply activities are bypassed, resulting in improved coordination between suppliers and farm users and lower costs in the supply channel, both potential sources of economic gains that can be passed on to farmers in terms of lower factor prices.

The large farmers appear to be using the same types of purchasing strategies that are increasingly being employed by farmer-buying groups organized to achieve similar purchasing advantages. While such buying groups are not a widespread phenomenon there are several known to the author that appear to be quite successful in obtaining price concessions

of a similar nature from suppliers. There is a notable lack of research into the actual economic gains that farmers can obtain through these buying groups. However, it seems feasible that, noting the sources of cost-reducing gains to large farms, these same advantages can be realized by a buying group providing it is properly organized and managed.

If all the market-related cost advantages to large farms, including machinery acquisition costs, could be obtained by family-type farms through collective purchasing, then, considering the labor and supervision cost disadvantages of large units, the family-type farm may have an absolute cost advantage vis-a-vis the large unit. At the least, the margin by which the large farm has a cost advantage is clearly narrowed.

Essentially the same argument can be made for product marketing. Most of the selling advantages found for large farms are the same type of gains that can accrue to farmers through collective bargaining and other group action in the product markets. Many examples can be found in the literature. Both Knudson [13] and Barr [3] , for example, have shown how producers acting collectively are better able to coordinate product qualities and schedule flows more easily than independent farmers, creating improved management of total supply in much the same manner as evidenced by large farms. Krause and Kyle found this to be the case among midwest corn farmers, as they discovered some smaller

farmers were achieving the same selling advantage as the large-scale units by combining their production with that of other farms for marketing purposes [14, p. 755] . In another study, Armbruster found that gross sales revenues to western potato growers could be increased by as much as 17.6 percent if the sellers act in concert through a marketing board-type arrangement where quantities, qualities and timing of deliveries are group decisions [1] . The success of dairy cooperatives in negotiating super-pool milk prices is additional evidence of the potential of collective action in product markets for increasing sales revenues to family-type farm units.

This brief analysis of economic advantages associated with large-scale farming indicates that most are market-related and, as such, may be available to family farms through collective market action. On the product marketing side, these potential gains stem from such actions as group contracting and collective bargaining; management of the quantities qualities and timing of supply; assuming various marketing functions, including market development and promotion; risk management by hedging and forward contracting; direct selling; and, perhaps in certain cases, extracting monopolistic prices from the profits of other channel members or from consumers' surplus. For production inputs, potential gains stem from lower prices through group purchasing of such factors as seed,

fertilizer, chemicals, petroleum products, feed, machinery, and machinery repair.

While these are areas of potential gain for family-type farms through collective action in their markets, there are additional factors that may offset some of this potential. Of primary concern are the costs and organizational and operational problems associated with group action.

Even though family farmers may be able to negotiate lower prices for inputs and higher prices for products through group efforts, they also incur some additional costs. These are associated with activities such as pooling products, distributing volume purchases, storing or disposing of surplus production and overpurchases, and the like. The large farm probably has many similar costs, however, as a part of operating a physically large enterprise. The extent to which these would reduce collective gains vis-a-vis the large farm is, therefore, somewhat unclear.

There are a host of organizational and operational problems inherent in the aggregation necessary to allow effective group action. Gaining sufficient membership for effectiveness, cooperation and willingness of members to work together for group benefits, gaining and maintaining liquidity, settlement of disputes between group members, and division of responsibilities and rewards are just a few of these. There

is no clear evidence as to how these problems can be avoided or overcome, and if they can't be, they will undoubtably doom collective action. Facilitating legislation and genuine interest by the participants can, I believe, overcome these problems: witness collective action in labor markets as one example, and the milk and fruit cooperatives in conjunction with marketing orders as others.

We need to know much more than we do currently about group organization if collective market action is to become a viable institution in U. S. agriculture. Questions such as these need answering: why have many traditional cooperatives failed in these areas? What is the optimal-sized group to gain the economic advantages possible with a minimum of intragroup conflict? How can cooperatives and other agribusinesses adjust to cope with and facilitate collective market action by farmers? What is the needed organizational framework? What are the costs of maintaining such a group? It may well be that we have different answers depending upon the group's objectives. For example, as few as 3 or 4 farmers may comprise an effective buying group, whereas tens or even hundreds of producers may be needed for effective bargaining in product markets.

Most of the recent interest in collective market behavior by family-type farms has centered on the product markets rather than the factor markets. This is evidenced by the large amount of research and literature of recent origin dealing with collective bargaining and other forms of group action as institutions for influencing farm prices and other terms of trade for farm-produced commodities. On the other hand, there has been relatively little recent interest in group action in factor markets, although Roy, and possibly others, has recognized this as an area of potential gain [23, pp. 209-210]. In view of this intense interest in product markets and lack of interest in factor markets it is ironical to note that, of the market-related gains to size detailed by Krause and Kyle (those that potentially could accrue to family-type farms through collective market action), those in the factor market (at least $9.48, Table 1) are almost twice the magnitude of those in the product market ($5.72, Table 1).

Conclusions and Implications for Research and Extension

What type of farm structure has an economic advantage? Overall, we have a mixed bag. The evidence that can be put forth in favor of the large-scale farm must be weighed against the potential gains to family-type farms from institutional innovation in their markets. Of the demonstrated economies to farm size, most of those favoring the large farm are

market-related rather than internal technical economies and, as such, may be available to the family-type farms, at least in part, through collective market action. If the pecuniary advantages of large farms continue, vis-a-vis the family farm, then the demise of the latter will surely occur. But, through collective market action by family-type farmers who have exhausted most technical economies to size the technological determinism moving our farm structure toward one dominated by large-scale farms can be modified, and managed.

If we are going to pursue the potential for collective market action by farmers as a viable means of influencing the emerging farm structure, then the implications for agricultural economists and other social scientists are clear. There are many unknowns that need investigation, many who need to be informed and educated, and an action plan needs to be developed to encourage implementation. Specific questions and implications for research and extension programs follow.

1. What, specifically, are the nature and the size of the market-related pecuniary economies that can be obtained by family-type farm units through collective action in the marketplace? Particular emphasis needs to be placed on the factor markets where there is currently a void of relevant information. Continuing efforts to quantify gains in the product markets also

should receive high priority.

2. What types of organizational structures and operating procedures are feasible and desirable for producers acting in concert in order to optimize their collective gain? The organizational and membership problems involved with group action in agriculture are legend. Some supply, service and marketing cooperatives have worked out many of these. Bargaining groups are trying various methods of organization and operation, with no single type yet emerging as the most workable. Little is known about the organization of purchasing groups. With the variety of active and developing organizations, this should prove fertile ground for research. Much is yet to be learned.

3. What types of policy measures and facilitating legislation need to be developed in order to encourage and accommodate efforts to achieve collective gains in the marketplace? Among the concerns in this area are enforceability of membership and group commitments, free-rider problems, settlement of disputes both within and without the group, anti-trust, boycotting and withholding rights and responsibilities, conflict between various producer groups, public representation, and other

behavioral and structural sanctions and limitations.

4. How can our analytical sophistication and theoretical framework be improved to enhance our ability to evaluate alternative structures and their resulting performance? Effective policy prescription depends upon accurate and insightful analysis and prediction. The relationships between structural factors and performance are not clear, nor are the critical structural factors and performance dimensions necessarily well defined. Improved indicators for monitoring progress are also an important requirement.

5. What types of educational approaches can we best use to assist and facilitate farmers in achieving potential gains through innovation and development of collective action in markets? The traditional extension education system is geared heavily toward individual demonstration; that is, demonstrating the benefits of innovations through individual trial. Obviously, benefits to group action cannot be demonstrated on an individual basis. We can't show one producer, on a trial basis, the benefits to be gained from working in concert with others. New techniques of extension education are an imperative.

An alternative to the technological determinism of large-scale farming has been put forth. If the family-type farm is a desirable part of our society, and I believe that it is, then we are challenged to find the types of institutional arrangements and rules of the game necessary to allow this type of farm structure to remain economically viable. Collective market action is one means to that end.

References

[1] Armbruster, Walter J., "Farm Bargaining Boards as an Agricultural Policy Tool," Marketing and Transportation Situation, ERS MTS-185, May 1972, pp. 22-25.

[2] Armstrong, David L., "Can Family Farms Compete?--An Economic Analysis," in Corporate Farming: What Are the Issues? Proceedings of North Central Workshop, Chicago, Illinois, April 1969, Department of Agricultural Economics Report 53, University of Nebraska, pp. 39-50.

[3] Barr, Wallace, "Bargaining in Perspective--A Summary" in Bargaining in Agriculture, North Central Regional Extension Publication 30, University of Missouri Extension Division C911, June 1971, pp. 45-50.

[4] Candler, Wilfred, "Impacts of the Changing Economic and Social Environment on Managers of Agricultural Firms," American Journal of Agricultural Economics 53:870-877, December 1971.

[5] Carson, Rachel Louise, Silent Spring, Boston: Houghton-Mifflin, 1962.

[6] Dietrich, Raymond A., Costs and Economies of Size in Texas-Oklahoma Cattle Feedlot Operations, Texas Agricultural Experiment Station B-1083, May 1969.

[7] Faris, J. Edwin and David L. Armstrong, "Economies in the Acquisition of Inputs--A Pilot Study," Canadian Journal of Agricultural Economics, 13:1, 1965, pp. 70-81.

[8] Galbraith, John Kenneth, The New Industrial State, Boston: Houghton-Mifflin, 1967.

[9] Godwin, Marshall R. and L. L. Jones, "The Emerging Food and Fiber System: Implications for Agriculture," American Journal of Agricultural Economics 53: 806-815, December 1971.

[10] Harl, Neil E., "Agricultural Structure and Corporations-Economics and Emotions," in Corporate Farming and the Family Farm, 1969 Proceedings of The National Farm Institute, Ames, Iowa State University Press, 1970, pp. 3-11.

[11] Helmberger, Peter, "O-Efficiency and the Economic Organization of Agriculture," in Agricultural Organization in the Modern Industrial Economy, Department of Agricultural Economics, The Ohio State University, NCR-20-68, 1968, pp. 18-28.

[12] Kleckner, Dean, "Competing with the Giants," in Corporate Farming and the Family Farm, 1969 Proceedings of the National Farm Institute, Ames, Iowa State University Press, 1970, pp. 58-62.

[13] Knudson, Ronald D., "Alternative Legislative Frameworks for Collective Bargaining in Agriculture," in Agricultural Organization in the Modern Industrial Economy, Department of Agricultural Economics, The Ohio State University, NCR-20-68, 1968, pp. 144-156.

[14] Krause, Kenneth R. and Leonard R. Kyle, "Economic Factors Underlying the Incidence of Large Farming Units, The Current Situation and Probable Trends," American Journal of Agricultural Economics 52: 748-761, December 1970.

[15] _____ and _____, Midwestern Corn Farms: Economic Status and the Potential for Large and Family-Sized Units, ERS AER 216, November 1971.

[16] Leibenstein, Harvey, "Allocative Efficiency vs 'X-Efficiency,' " American Economic Review, June 1966, pp. 392-415.

[17] Madden, J. Patrick, Economies of Size in Farming, ERS AER 107, February 1967.

[18] Manuel, Milton R., "Organizing and Financing Agricultural Production in the 1970's: Discussion," American Journal of Agricultural Economics 53: 816, December 1971.

[19] Mueller, Willard F., A Primer on Monopoly and Competition, New York: Random House, 1970.

[20] Nikolitch, Radoje, Family-Size Farms in U. S. Agriculture, ERS 499, February 1972.

[21] Paarlberg, Donald, "The Forces Modernizing Farming" in Corporate Farming and the Family Farm, 1969 Proceedings of the

National Farm Institution, Ames, Iowa State University Press, 1970, pp. 111-118.

[22] Raup, Phillip M., "What Policies Should We Have Toward Corporations in Farming?" Paper presented to the National Agricultural Policy Conference in Williamsburg, Virginia, September 11, 1969.

[23] Roy, Ewell Paul, Collective Bargaining in Agriculture, Danville: Interstate, 1970.

[24] Shaffer, James Duncan, "The Scientific Industrialization of the U. S. Food and Fiber Sector: Background for Market Policy," in Agricultural Organization in the Modern Industrial Economy, The Department of Agricultural Economics, The Ohio State University, NCR-20-68, 1968, pp. 1-14.